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(f) An MC 331 type cargo tank may be used where MC 306, MC 307, MC 312, DOT 406, DOT 407 or DOT 412 type cargo tanks are authorized. An MC 307, MC 312, DOT 407 or DOT 412 type cargo tank may be used where MC 306 or DOT 406 type cargo tanks are authorized. A higher integrity tank used instead of a specified tank must meet the same design profile (for example, an MC 331 cargo tank must be lined if used in place of a lined MC 312 cargo tank.)

(g) *Remote control of self-closing stop valves—MC 330, MC 331 and MC 338 cargo tanks.* Each liquid or vapor discharge opening in an MC 330 or MC 331 cargo tank and each liquid filling and liquid discharge line in an MC 338 cargo tank must be provided with a remotely controlled internal self-closing stop valve, except when an MC 330 or MC 331 cargo tank is marked and used exclusively to transport carbon dioxide, or except when an MC 338 is used to transport argon, carbon dioxide, helium, krypton, neon, nitrogen, and xenon. However, if the cargo tank motor vehicle was certified before January 1, 1995, this requirement is applicable only when an MC 330 or MC 331 cargo tank is used to transport a flammable liquid, flammable gas, hydrogen chloride (refrigerated liquid), or anhydrous ammonia; or when an MC 338 cargo tank is used to transport flammable ladings.

(h) A cargo tank motor vehicle authorized by the Transport Canada TDG Regulations (IBR, see §171.7 of this subchapter) may be used provided it conforms to the applicable requirements in §171.12 of this subchapter.

[Amdt. 173–212, 54 FR 25005, June 12, 1989]

EDITORIAL NOTE: For FEDERAL REGISTER citations affecting §173.33, see the List of CFR Sections Affected which appears in the Finding Aids section of the printed volume and at www.fdsys.gov.

§ 173.34 [Reserved]

§ 173.35 Hazardous materials in IBCs.

(a) No person may offer or accept a hazardous material for transportation in an IBC except as authorized by this subchapter. Each IBC used for the transportation of hazardous materials must conform to the requirements of its specification and regulations for the transportation of the particular com-

modity. A specification IBC, for which the prescribed periodic retest or inspection under subpart D of part 180 of this subchapter is past due, may not be filled and offered for transportation until the retest or inspection have been successfully completed. This requirement does not apply to any IBC filled prior to the retest or inspection due date.

(b) *Initial use and reuse of IBCs.* (Also see §180.352 of this subchapter.) An IBC other than a multiwall paper IBC (13M1 and 13M2) may be reused. If an inner liner is required, the inner liner must be replaced before each reuse. Before an IBC is filled and offered for transportation, the IBC and its service equipment must be given an external visual inspection, by the person filling the IBC, to ensure that:

(1) The IBC is free from corrosion, contamination, cracks, cuts, or other damage which would render it unable to pass the prescribed design type test to which it is certified and marked; and

(2) The IBC is marked in accordance with requirements in §178.703 of this subchapter. Additional marking allowed for each design type may be present. Required markings that are missing, damaged or difficult to read must be restored or returned to original condition.

(c) A metal IBC, or a part thereof, subject to thinning by mechanical abrasion or corrosion due to the lading, must be protected by providing a suitable increase in thickness of material, a lining or some other suitable method of protection. Increased thickness for corrosion or abrasion protection must be added to the wall thickness specified in §178.705(c)(1)(iv) of this subchapter.

(d) Notwithstanding requirements in §173.24b of this subpart, when filling an IBC with liquids, sufficient ullage must be left to ensure that, at the mean bulk temperature of 50 °C (122 °F), the IBC is not filled to more than 98 percent of its water capacity.

(e) Where two or more closure systems are fitted in series, the system nearest to the hazardous material being carried must be closed first.

(f) During transportation—

(1) No hazardous material may remain on the outside of the IBC; and

(2) Each IBC must be securely fastened to or contained within the transport unit.

(g) Each IBC used for transportation of solids which may become liquid at temperatures likely to be encountered during transportation must also be capable of containing the substance in the liquid state.

(2) Liquids having a vapor pressure greater than 110 kPa (16 psig) at 50 °C (122 °F) or 130 kPa (18.9 psig) at 55 °C (131 °F) may not be transported in metal IBCs.

(1) A rigid plastic or composite IBC may only be filled with a liquid having a vapor pressure less than or equal to the greater of the following two values: the first value is determined from any of the methods in paragraphs (h)(1) (i), (ii) or (iii) of this section. The second value is determined by the method in paragraph (h)(1)(iv) of this section.

(i) The gauge pressure (pressure in the IBC above ambient atmospheric pressure) measured in the IBC at 55 °C (131 °F). This gauge pressure must not exceed two-thirds of the marked test pressure and must be determined after the IBC was filled and closed at 15 °C (60 °F) to less than or equal to 98 percent of its capacity.

(ii) The absolute pressure (vapor pressure of the hazardous material plus atmospheric pressure) in the IBC at 50 °C (122 °F). This absolute pressure must not exceed four-sevenths of the sum of the marked test pressure and 100 kPa (14.5 psia).

(iii) The absolute pressure (vapor pressure of the hazardous material plus atmospheric pressure) in the IBC at 55 °C (131 °F). This absolute pressure must not exceed two-thirds of the sum of the marked test pressure and 100 kPa (14.5 psia).

(iv) Twice the static pressure of the substance, measured at the bottom of the IBC. This value must not be less than twice the static pressure of water.

(2) Gauge pressure (pressure in the IBC above ambient atmospheric pressure) in metal IBC must not exceed 110 kPa (16 psig) at 50 °C (122 °F) or 130 kPa (18.9 psig) at 55 °C (131 °F).

(i) The requirements in this section do not apply to DOT-56 or -57 portable tanks.

(j) No IBC may be filled with a Packing Group I liquid. Rigid plastic, composite, flexible, wooden or fiberboard IBC used to transport Packing Group I solid materials may not exceed 1.5 cubic meters (53 cubic feet) capacity. For Packing Group I solids, a metal IBC may not exceed 3 cubic meters (106 cubic feet) capacity.

(k) When an IBC is used for the transportation of liquids with a flash point of 60 °C (140 °F) (closed cup) or lower, or powders with the potential for dust explosion, measures must be taken during product loading and unloading to prevent a dangerous electrostatic discharge.

(1) *IBC filling limits.* (1) Except as provided in this section, an IBC may not be filled with a hazardous material in excess of the maximum gross mass marked on that container.

(2) An IBC which is tested and marked for Packing Group II liquid materials may be filled with a Packing Group III liquid material to a gross mass not exceeding 1.5 times the maximum gross mass marked on that container, if all the performance criteria can still be met at the higher gross mass.

(3) An IBC which is tested and marked for liquid hazardous materials may be filled with a solid hazardous material to a gross mass not exceeding the maximum gross mass marked on that container. In addition, an IBC intended for the transport of liquids which is tested and marked for Packing Group II liquid materials may be filled with a Packing Group III solid hazardous material to a gross mass not exceeding the marked maximum gross mass multiplied by 1.5 if all the performance criteria can still be met at the higher gross mass.

(4) An IBC which is tested and marked for Packing Group I solid materials may be filled with a Packing Group II solid material to a gross mass not exceeding the maximum gross mass marked on that container, multiplied by 1.5, if all the performance criteria can be met at the higher gross mass; or a Packing Group III solid material to a gross mass not exceeding the maximum gross mass marked on the IBC, multiplied by 2.25, if all the performance criteria can be met at the higher gross

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mass. An IBC which is tested and marked for Packing Group II solid materials may be filled with a Packing Group III solid material to a gross mass not exceeding the maximum gross mass marked on the IBC, multiplied by 1.5.

[Amdt. 173-238, 59 FR 38064, July 26, 1994, as amended by Amdt. 173-243, 60 FR 40038, Aug. 4, 1995; 64 FR 10777, Mar. 5, 1999; 66 FR 45380, 45381, Aug. 28, 2001; 68 FR 48569, Aug. 14, 2003; 71 FR 78631, Dec. 29, 2006; 75 FR 5393, Feb. 2, 2010]

§ 173.36 Hazardous materials in Large Packagings.

(a) No person may offer or accept a hazardous material for transportation in a Large Packaging except as authorized by this subchapter. Except as otherwise provided in this subchapter, no Large Packaging may be filled with a Packing Group I or II material. Each Large Packaging used for the transportation of hazardous materials must conform to the requirements of its specification and regulations for the transportation of the particular commodity.

(b) *Packaging design.* (1) *Inner packaging closures.* A Large Packaging containing liquid hazardous materials must be packed so that closures on inner packagings are upright.

(2) *Flexible Large Packagings.* Flexible Large Packagings (e.g., 51H) are only authorized for use with flexible inner packagings.

(3) *Friction.* The nature and thickness of the outer packaging must be such that friction during transportation is not likely to generate an amount of heat sufficient to dangerously alter the chemical stability of the contents.

(4) *Securing and cushioning.* Inner packagings of Large Packagings must be packed, secured and cushioned to prevent their breakage or leakage and to control their shifting within the outer packaging under conditions normally incident to transportation. Cushioning material must not be capable of reacting dangerously with the contents of the inner packagings or having its protective properties significantly weakened in the event of leakage.

(5) *Metallic devices.* Nails, staples and other metallic devices must not protrude into the interior of the outer

packaging in such a manner as to be likely to damage inner packagings or receptacles.

(c) *Initial use and reuse of Large Packagings.* A Large Packaging may be reused. If an inner packaging is constructed of paper or flexible plastic, the inner packaging must be replaced before each reuse. Before a Large Packaging is filled and offered for transportation, the Large Packaging must be given an external visual inspection, by the person filling the Large Packaging, to ensure:

(1) The Large Packaging is free from corrosion, contamination, cracks, cuts, or other damage which would render it unable to pass the prescribed design type test to which it is certified and marked; and

(2) The Large Packaging is marked in accordance with requirements in § 178.910 of this subchapter. Additional marking allowed for each design type may be present. Required markings that are missing, damaged or difficult to read must be restored or returned to original condition.

(d) During transportation—

(1) No hazardous material may remain on the outside of the Large Packaging; and

(2) Each Large Packaging must be securely fastened to or contained within the transport unit.

(e) Each Large Packaging used for transportation of solids which may become liquid at temperatures likely to be encountered during transportation may not be transported in paper or fiber inner packagings. The inner packagings must be capable of containing the substance in the liquid state.

(f) Liquid hazardous materials may only be offered for transportation in inner packagings appropriately resistant to an increase of internal pressure likely to develop during transportation.

(g) A Large Packaging used to transport hazardous materials may not exceed 3 cubic meters (106 cubic feet) capacity.

(h) *Mixed contents.* (1) An outer Large Packaging may contain more than one hazardous material only when—